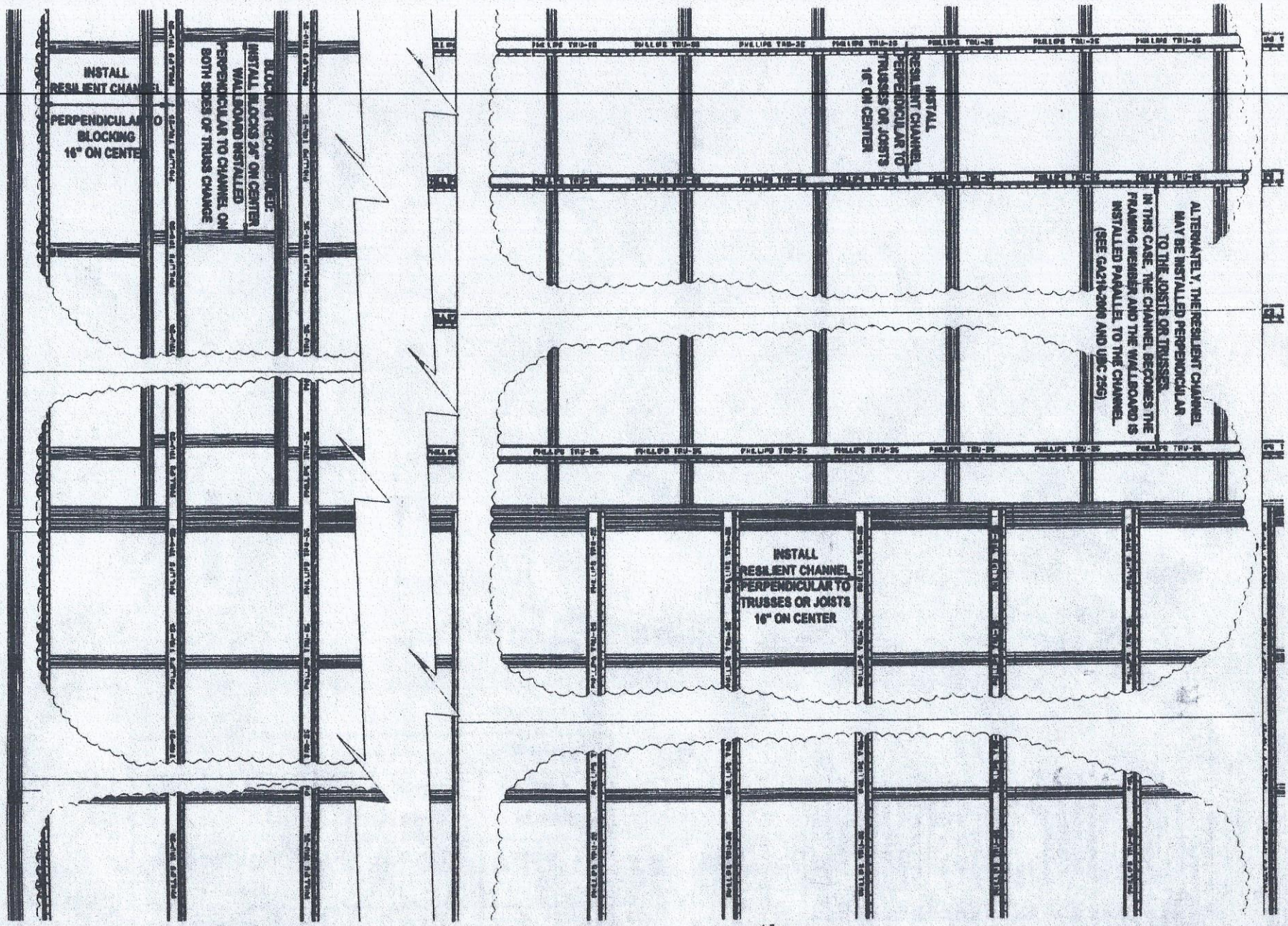

Figure 1
Preferred and alternate treatment of resilient channel ceiling where trusses or joists change direction.

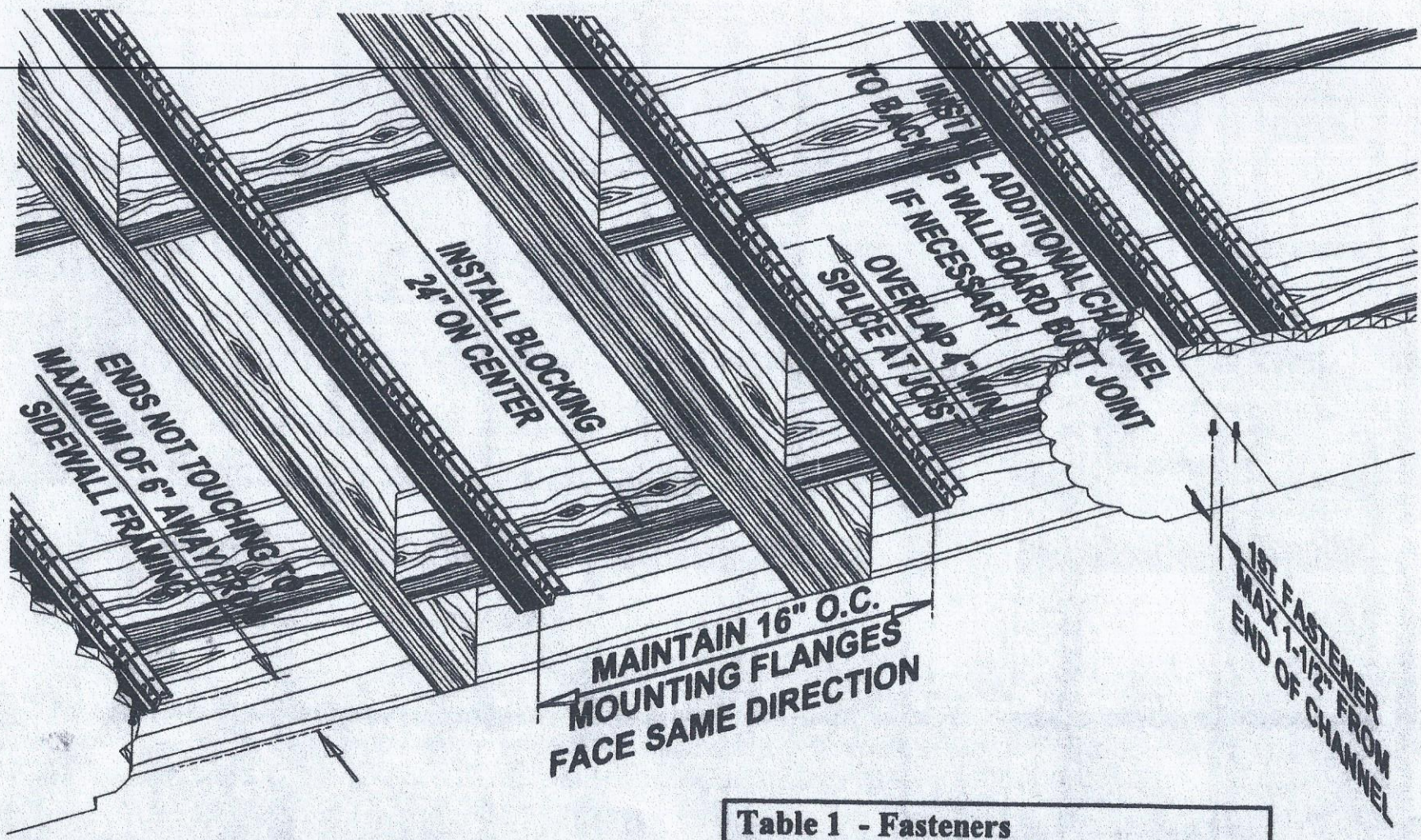

Table 1 - Fasteners		
1-1/4" or greater	Type W or Type S	Flange to Framing
1" only	Type S	1/2" Wallboard to Channel
1-1/8" only	Type S	5/8" Wallboard to Channel

DRYWALL CONTRACTORS ASSOCIATION OF NEVADA

Figure 2

Recommendations For

Installation Of

Resilient Sound Channel

Table of Contents

Reference

1. National Council of Acoustical Consultants Fall 2002 Newsletter
2. Gypsum Construction Handbook (USG)
3. ICBO Evaluation Report ER-1632
4. Uniform Building Code Manual
5. Gypsum Association Fire Resistance Design Manual
6. Western Pacific Distributing Wallboard Joint Deformation Handbook

Contact Information

1. Phillips Manufacturing
   4404 S. 76 Circle
   Omaha, NE 68127
   Craig Liston: 800-318-8557
   FAX: 602-276-8055
   URL: www.phillipsmfg.com

2. ICBO Evaluation Service, Inc.
   5360 Workman Mill Road
   Whittier, CA 90601
   URL: www.icboes.org

3. National Gypsum Company
   2001 Rexford Road
   Charlotte, NC 28211
   800-628-4662
   FAX: 800-329-6421
   URL: www.national-gypsum.com

4. USG Corporation (Gypsum Construction Manual)
   125 South Franklin Street
   Chicago, IL 60606-4968
   800-874-4978
   URL: www.usg.com

5. Gypsum Association (Fire Resistance Manual)
   810 First Street NE, #510
   Washington, DC 20002
   202-289-5440
   FAX: 202-289-3707
   URL: www.gypsum.org

6. Uniform Building Code Manual
   (No website available-check the reference section at your city library or purchase at your local book dealer)

7. Western Pacific Distributing
   341 W. Meat Avenue
   Orange, CA 92865
   866-974-6837
   FAX: 866-637-9033
   URL: www@westpac.bz

8. Dietrich Industries
   420 S. 53rd Avenue
   Phoenix, AZ 85043
   602-447-0204
   FAX: 602-447-0317
   URL: www.DietrichIndustries.com

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July 23, 2003

Attention: Drywall Contractors

Subject: Recommendations for Installation of Resilient Channel (FC-1) in Ceilings to "Minimize" Ridging and Cracking

History of Resilient Sound Channel

Jerry G. Lilly, from JGL Acoustics, Inc. quoted in the NCAC (National Council of Acoustical Consultants) Fall 2002 Newsletter "As most of you know, the resilient channel was developed by USG in the 1960's. According to Stan Roller, the product was not originally designed to provide improved sound attenuation, but rather to avoid cracks in the drywall where the direction of the framing changes. The original product was called RC-1, and it underwent numerous acoustical tests."

Features

Resilient attachment of gypsum board with resilient channels provides highly efficient drywall partitions and ceilings. The steel resilient channels float the panels away from studs and joists, and provide a spring action that isolates the gypsum board from the framing. This spring action also tends to level the panel when installed over uneven framing. (Reference Gypsum Construction Handbook) In addition, resilient channel provides good sound attenuation. Test results comparing USG and Phillips channel tested at Twin City Testing Corporation, St. Paul, Minnesota showed that Phillips resilient channel was equal to the USG resilient channel product.

Resilient Channel Specifications

- Steel - .0209 Minimum Gauge Thickness
- Width of Face – 1.25 Inches Minimum
  Face Must Be Knurled – Dimple Spacing .10 Inches Maximum
- Height of Leg - .50 Inches Minimum
- Width of Flange - .44 Inches Minimum
- Hole Pattern in Nailing Flange – 1.37 Inches Maximum
- Standard length 12' Feet

*See Table of Contents #4 for ICBO Configuration Requirements.

Installation - Ceilings

Resilient channel should be attached at right angles (90°) to wood trusses or joists 16" on center with 1 ¼" or greater Type W or 1 ¼" or greater Type S screws (nails are not recommended). The open side of the resilient channels should always be installed the same direction and attached at each intersection. Start the installation with the center of the face

of the channel a maximum of 6" from the wall and end at a maximum of 6" from the opposite side. It may require that the last channel spacing is less then 16". This permits a floating angle wallboard installation.

When splices are required, splice channels directly over the joist or truss by overlapping not butting the channel. The overlap shall be a minimum of 4". Drive screw through both flanges into the joist or truss.

When there is a change in direction of the joist or truss creating a girder, Phillips recommends that blocking should be used 24" on center on the shorter joist or truss run. This permits the channels to continue to run in the same direction. This method of resilient channel framing permits the wallboard to be installed continuously in the same direction spanning the girder. (Do not splice at girder.)

If no blocking is used, then the channels must be installed at right angles to the framing member 16" on center. Thus, the wallboard may continue in the same direction as the resilient channels. The 16" on center installed resilient channel may be considered the framing member (see UBC Table 25g). (Also Section 3 of the Gypsum Association Fire Design Manual (GA 216-2000-2.1.6, and GA 600-2000, Section I, Item 16 can be construed to address this situation as well.)

Cathedral Ceiling Installation

Resilient channel should be installed on Cathedral Ceilings (single or double angled ceiling) with the center of the face of the channel approximately 6" from the top to permit a floating angle wallboard installation. Resilient channel must be installed with mounting flange down.

Butt Joints

The resilient channel must be installed parallel and at 90° to the wall 16" on center for butt joints. The ends of the wallboard must meet at the center of the wall board mounting face on the resilient channel. If additional channel is required at the butt joint the mounting flange must be facing in the same direction. It should be installed with a maximum of 3" away from the butt joint. This additional channel shall be a minimum of 60" long.

Installation of Gypsum Board

Gypsum board should be installed perpendicular to the joist or truss because if offers the following advantages:

- Strongest dimension of wallboard runs across framing members
- Bridges irregularities in alignment and spacing of frame members
- Better bracing strength – each board ties more framing members together than does parallel application (Reference Gypsum Construction Handbook)

Install wallboard perpendicular to the channel with 1" Type S Buglehead screws only for ½" board and 1 1/8" Type S Buglehead screws only on 5/8" board 12" maximum on center. Screws used to attach wallboard to resilient channels shall not contact wood joist or truss. Stagger every other board and use the longest wallboard practicable. Avoid butt joints if possible.

Floating Angle Installation

Floating angles may be created. The first fastener attaching the wallboard to the resilient channel should be a maximum of 6" from the wall. When attaching the wall board to the side wall the first fastener should be a maximum of 6" from the ceiling.

The foregoing is presented for general application in the installation of resilient channel. The installation and specifications must be reviewed and approved by the builder's design professional to verify suitability for each particular installation. Phillips warranties, responsibilities and liabilities in respect to resilient channel and other products are defined and limited in its "Terms and Conditions of Sale."

If you should have any questions regarding these installation recommendations, please call me at 800-822-5055.

Sincerely,

Roland Kunz
Executive Vice President

RJK/CL/jsh

DIETRICH
METAL FRAMING
A Worthington Industries Company

Dietrich Metal Framing: Installation Guide for Resilient Channel

To our valued customers:

Resilient channel was originally introduced in the 1960's by United States Gypsum. The product was originally designed to provide a cushion between structural framing and drywall panels. The intent was that the cushion would allow the framing to move independently of the drywall panels and reduce the occurrence of joint cracking. After undergoing sound tests, it was found that resilient channel also provided an excellent means of reducing sound transmission between adjacent rooms and ceiling assemblies.

For your convenience, we are providing installation instructions for Dietrich Metal Framing resilient channel. These channels (RCUR and RCSD) were previously marketed under the Unimast brand name. Dietrich Metal Framing recently acquired Unimast and will continue to supply these same high quality products under the Dietrich brand name.

This letter is intended as a guideline for the use of resilient channel in ceilings to minimize ridging and cracking. Please be aware that the use of resilient channel to reduce joint cracking is not a universal remedy. However, if installed properly, our product will reduce such occurrences.

Partitions

Dietrich Metal Framing's resilient channel (RCUR/RCSD) is affixed to the wall studs horizontally, starting at a maximum of 2" from the floor and finishing within 6" of the ceiling. Except near the floor where the flange should be on top for ease of installation, the channel is attached to the studs at 16" or 24" intervals with the attachment flange down. Use 1-1/4" Type W or 1-1/4" Type S screws (Do Not Use Nails) driven through the resilient channel flange at each intersection of a framing member. Extend channels into all corners and attach to corner framing. Splice channels directly over studs by overlapping, not butting, and driving a fastener through both flanges of the channel into the support.

Ceilings

Attach the resilient channel at right angles to the wood or steel joists and trusses. Attach with 1-1/4" Type W or 1-1/4" Type S screws (Do Not Use Nails). Drive the screws through the resilient channel flange at each intersection of the joist or truss. Truss and joist spacing shall not exceed 24" on center. RCUR/RCSD spacing is 16" on center. Start and end the installation 6" maximum away from adjacent walls and sloped ceiling intersections. This will allow for the "floating angle" method of finishing drywall interior corners (Reference page 177 of the Gypsum Construction Handbook, 90th Anniversary Edition). Install all resilient channels with the open side facing in the same direction.

420 South 53rd Avenue, Suite 102 Phoenix, Arizona 85043
TEL 602.447.0204 FAX 602.447.0317 www.DietrichIndustries.com

DIETRICH
METAL FRAMING
A Worthington Industries Company

Use 1-1/8" Type S Buglehead screws for 5/8" wallboard installation and use 1" Type S Buglehead screws for 1/2" wallboard installation. Screws should be placed at a maximum of 12" on center for both wallboard sizes. Do Not Use Nails. Screws are preferred as they reduce the possibility of cracking and squeaks in floor assemblies (they tend to flex with loading and movement). Stagger every other board and install the longest wallboard possible. If there is a directional change in the joist or truss framing, blocking can be installed at a maximum of 24" on center to coincide with the resilient channel layout. For sloped (cathedral) ceilings, the channel shall be installed with the attachment flange down. Splicing is allowed by overlapping, not butting the channels. Drive the fastener through both flanges of the RCUR/RCSD and into the framing support. Do not splice resilient channel at the Girder.

On occasion, utilization of butt joints may be necessary. Whenever possible, avoid butt joints as they may tend to increase ridging and cracking occurrences. When butting two ends of wallboard, the ends of the wallboard must meet at the center of the resilient channel top mounting face.

Resilient channel is designed only to support the dead load of gypsum wallboard. Lighting fixtures, air vents, ceiling fans, and other suspended fixtures must be attached directly to the truss or joist framing. For further protection against cracking in ceiling assemblies, expansion joints can also be installed in unison with the resilient channel (RCUR/RCSD). As always, all wallboard shall be installed per the individual manufacturers recommendations and construction details.

Please feel free to call with any questions regarding the Dietrich Metal Framing resilient channel (RCUR/RCSD). Dietrich Metal Framing proudly offers the broadest product line in the light-gauge metal framing industry.

Sincerely,

Gregg Stahl

Gregg Stahl
Product Manager

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TABLE 25-G—SINGLE-PLY GYPSUM WALLBOARD APPLIED PARALLEL (∥) OR PERPENDICULAR (⊥) TO FRAMING MEMBERS

THICKNESS OF GYPSUM WALLBOARD (inch)	PLANE OF FRAMING SURFACE	MAXIMUM SPACING OF FRAMING MEMBER[1] (Center to Center) (inches)	LONG DIMENSION OF GYPSUM WALLBOARD SHEETS IN RELATION TO DIRECTION OF FRAMING MEMBERS		MAXIMUM SPACING OF FASTENERS[1] (Center to Center) (inches)		NAILS[2]—TO WOOD
× 25.4 for mm		× 25.4 for mm	∥	⊥	Nails[3]	Screws[4]	× 25.4 for mm
1/2	Horizontal	16	P	P	7	12	No. 13 gage, 1 3/8" long, 19/64" head; 0.098" diameter, 1 1/4" long, annular ringed; 5d, cooler (0.086" dia., 1 5/8" long, 15/64" head) or wallboard (0.086" dia., 1 5/8" long, 9/32" head) nail.
		24	NP	P			
	Vertical	16	P	P	8	16	
		24	P	P		12	
5/8	Horizontal	16	P	P	7	12	No. 13 gage, 1 5/8" long, 19/64" head; 0.098" diameter, 1 3/8" long, annular ringed; 6d, cooler (0.092" dia., 1 7/8" long, 1/4" head) or wallboard (0.0915" dia., 1 7/8" long, 19/64" head) nail.
		24	NP	P			
	Vertical	16	P	P	8	16	
		24	P	P		12	
Nail or Screw Fastenings with Adhesives (Maximum Center to Center in Inches)							
× 25.4 for mm							
(Column headings as above)					End	Edges	Field
1/2 or 5/8	Horizontal	16	P	P	16	16	24	As required for 1/2" and 5/8" gypsum wallboard, see above.
		24	NP	P	16	24	24	
	Vertical	24	P	P	16	24	NR	

NOTES: Horizontal refers to applications such as ceilings. Vertical refers to applications such as walls.

∥ denotes parallel.

⊥ denotes perpendicular. P—Permitted. NP—Not permitted. NR—Not required.

[1] A combination of fasteners consisting of nails along the perimeter and screws in the field of the gypsum board may be used with the spacing of the fasteners shown in the table.

For fire-resistive construction, see Tables 7-B and 7-C. For shear-resisting elements, see Table 25-I.

[2] Where the metal framing has a clinching design formed to receive the nails by two edges of metal, the nails shall not be less than 5/8 inch (15.9 mm) longer than the wallboard thickness, and shall have ringed shanks. Where the metal framing has a nailing groove formed to receive the nails, the nails shall have barbed shanks or be 5d, No. 13 1/2 gage, 1 5/8 inches (41 mm) long, 15/64-inch (6.0 mm) head for 1/2-inch (12.7 mm) gypsum wallboard; 6d, No. 13 gage, 1 7/8 (48 mm) inches long, 15/64-inch (6.0 mm) head for 5/8-inch (15.9 mm) gypsum wallboard.

[3] Two nails spaced 2 inches to 2 1/2 inches (51 mm to 64 mm) apart may be used where the pairs are spaced 12 inches (305 mm) on center except around the perimeter of the sheets.

[4] Screws shall be long enough to penetrate into wood framing not less than 5/8 inch (15.9 mm) and through metal framing not less than 1/4 inch (6.4 mm).

TABLE 25-H—APPLICATION OF TWO-PLY GYPSUM WALLBOARD[1]

Thickness of Gypsum Wallboard (Each Ply) (inch)	Plane of Framing Surface	Long Dimension of Gypsum Wallboard Sheets	Maximum Spacing of Framing Members (Center to Center) (inches)	Maximum Spacing of Fasteners (Center to Center) (inches)				
				× 25.4 for mm				
				Base Ply			Face Ply	
× 25.4 for mm			× 25.4 for mm	Nails[2]	Screws[3]	Staples[4]	Nails[2]	Screws[3]
FASTENERS ONLY								
3/8	Horizontal	Perpendicular only	16	16	24	16	7	12
	Vertical	Either direction	16				8	
1/2	Horizontal	Perpendicular only	24				7	
	Vertical	Either direction	24				8	
5/8	Horizontal	Perpendicular only	24				7	
	Vertical	Either direction	24				8	
FASTENERS AND ADHESIVES								
3/8 Base ply	Horizontal	Perpendicular only	16	7	12	5	Temporary nailing or shoring to comply with Section 2511.4	
	Vertical	Either direction	24	8		7		
1/2 Base ply	Horizontal	Perpendicular only	24	7		5		
	Vertical	Either direction	24	8		7		
5/8 Base ply	Horizontal	Perpendicular only	24	7		5		
	Vertical	Either direction	24	8		7		

[1] For fire-resistive construction, see Tables 7-B and 7-C. For shear-resisting elements, see Table 25-I.

[2] Nails for wood framing shall be long enough to penetrate into wood members not less than 3/4 inch (19.1 mm), and the sizes shall comply with the provisions of Table 25-G. For nails not included in Table 25-G, use the appropriate size cooler or wallboard nails. Nails for metal framing shall comply with the provisions of Table 25-G.

[3] Screws shall comply with the provisions of Table 25-G.

[4] Staples shall not be less than No. 16 gage by 3/4-inch (19.1 mm) crown width with leg length of 7/8 inch (22.2 mm), 1 1/8 inches (28.6 mm) and 1 3/8 inches (34.9 mm) for gypsum wallboard thicknesses of 5/8 inch (9.5 mm), 1/2 inch (12.7 mm) and 5/8 inch (15.9 mm), respectively.